

REMARKS

The application has been reviewed in light of the Non-Final Office Action mailed October 29, 2004. At the time of the Non-Final Office Action, claims 1-26 were pending in this application, and all of these claims were rejected.

I. Objections to the Drawings

The Examiner objected to the drawings as not complying with 37 C.F.R. 1.83(a), 1.84(h)&(j) and MPEP 608.02(d) for not showing each and every claim element. The Applicants have amended the drawings and specification to overcome the Examiner's objection.

The Applicants have incorporated new Figure 3 into the application to illustrate the internal elements of the data interrogator tool and data sensors, which are recited in one or more of the claims depending from independent claim 13. No new matter has been added by incorporating new Figure 3 into the present application. All of the elements shown in new Figure 3 are clearly disclosed in the original specification at paragraphs [0023] and [0028]. All other structural elements recited in claims 13-26 are clearly illustrated in Figures 1-3.

Applicants have also incorporated new Figure 4 into the application to illustrate the method steps recited in claims 1-12. No new matter has been added by incorporating new Figure 4 into the present application. Each of these recited steps were clearly disclosed in the original specification at paragraphs [0027] and [0028].

A pen-and-ink sketch showing the changes in red ink are contained in the mark-up version of the drawings contained in Exhibit 2, as requested by the Examiner. The Applicants respectfully call to the attention of the Examiner that the current edition of the MPEP has removed Section 608.02(r) and therefore no requirement is believed to exist for Applicants to transmit the corrected drawings to the Official Draftsman. However, for the convenience of the

Examiner, the Applicants have enclosed a letter to the Official Draftsman herewith, which the Examiner can transmit to the Official Draftsman if he deems it necessary.

II. Election Requirement

The Examiner has stated that “no generic claims exist that are deemed patentable and therefore all dependent claim combinations result in distinct inventions or at least distinct species which can stand on their own merits.” The Applicants respectfully traverses the Examiner’s imposition of this requirement. As can be seen from the arguments below, generic claims exist that are patentable over the prior art of record. Furthermore, Applicants are not in a position to elect any species of claims as the Examiner has failed to point out what he considers to be the various groupings of species. The Examiner is invited to contact the undersigned to discuss this issue in advance of any further written communication if the Examiner deems it necessary.

III. Rejections under 35 U.S.C. § 102

The Examiner rejected claims 1-26 under 35 U.S.C. § 102(a), (b) and (e) as being anticipated by Goldwasser (6,285,955). The Applicants respectfully traverse this rejection.

The Goldwasser patent discloses a down hole data logger (2) which has a plurality of sensors (24) and (26). Unlike the present invention, however, the sensors in the Goldwasser patent are integrated into the data logger (2). *See* '955 Patent, Col. 5, lines 24-37. Furthermore, the data logger (2) disclosed in the Goldwasser patent is too large to be injected into the subterranean formation. In particular, the data logger (2) in the Goldwasser patent has an elongated shaft portion (4) and a top head portion (6). The length of the shaft portion (4) from top to bottom is preferably between 12 to 16 inches. *Id.* at Col. 4, line 17. With such a configuration and size, the data loggers (2) were clearly not designed to be deployed into a subterranean fracture. In fact, the Goldwasser patent itself admits this. “Preferably, the diameter or cross sectional length of the head portion (6) should be larger than the diameter or cross sectional length of the shaft portion (4). Thus, when the data logger (2) is installed in a well or pipe, *the head portion (6) prevents the entire data logger (2) from falling completely into the well or pipe because of its larger diameter or cross-sectional length.*” *Id.* at lines 52-56 (emphasis added).

With reference to claims 1-26 of the present invention, the Goldwasser patent fails to disclose each and every recited element and therefore does not anticipate these claims. In particular, amended independent claim 1 recites the step of “introducing the plurality of data sensors into **a fracture in** the subterranean formation.” Since the sensors (24) and (26) disclosed in the Goldwasser patent are integrated into the data logger (2), which is described as not being capable of even falling completely into the well, Goldwasser fails to teach or suggest the step of introducing data sensors into a fracture in the subterranean formation. Accordingly, the Goldwasser patent fails to anticipate independent claim 1. Similarly, the Goldwasser patent fails to anticipate claims 2-12, which depend from amended independent claim 1. Therefore, the Examiner’s rejection under § 102 as to claims 1-12 should be withdrawn.

Turning to amended independent claim 13, it recites “a plurality of wireless data sensors **each having a unique identifier** adapted for injection in a **fracture in the** subterranean formation.” The Goldwasser patent fails to teach or suggest a structure whereby the sensors (24) and (26) can be injected into “a fracture in the subterranean formation.” Rather, in the Goldwasser patent, the sensors (24) and (26) are integrated with the data logger (2), which was pointed out above is not capable of being inserted completely within the well let alone a fracture in the subterranean formation. Accordingly, the Goldwasser patent fails to anticipate independent claim 13. Similarly, the Goldwasser patent fails to anticipate claims 14-26, which depend from amended independent claim 13. Therefore, the Examiner’s rejection under § 102 as to claims 13-23 should be withdrawn.

IV. Arguments Relating to the Combination of the References Asserted

The Applicants acknowledge their duty under 37 C.F.R. 1.56. Each claim in the present application has been commonly owned at all times during the pendency of this

application.

A. Rejection Over Simpson et al. in view of Aronstam et al.

The Examiner rejected claims 1-26 under 35 U.S.C. § 103(a) as being unpatentable over Simpson et al. (6,117,643) in view of Aronstam et al. (6,443,228). The Applicants respectfully traverse this rejection.

Simpson et al. disclose monolithic bioelectronic devices comprising a bioreporter and an OASIC. Simpson et al. disclose that these bioluminescent bioreporter integrated circuits are useful in detecting substances such as pollutants, explosives, and heavy metals residing in inhospitable areas such as groundwater, industrial process vessels and battlefields. '643 Patent, Abstract. Simpson et al. suggest that the disclosed bioreporter could be used in oil exploration but do not specify how. In particular, Simpson et al. fail to teach or suggest using the bioreporters disclosed therein to map a fracture in a subterranean formation or to obtain other data such as pressure or temperature data from the fracture as the plurality of wireless sensors do in the present invention.

Aronstam et al. disclose a plurality of flowable devices and methods of utilizing such flowable devices in well bores to provide communication between surface and downhole instruments and among downhole devices as well as to act as sensors. Aronstam et al. further disclose that the flowable devices may be a memory device or a device that can provide a measurement of a parameter of interest. '228 Patent, Col. 4, lines 52-60. The flowable devices are introduced into the flow of a fluid flowing in the wellbore. The fluid moves the device in the wellbore. The flowable devices return to the surface with the returning fluid where the data in the flowable devices and/or the measurement information obtained by the flowable devices is retrieved for use and analysis. *Id.* at Col. 3, lines 1-4. Aronstam et al. fail to teach or suggest

using the flowable devices to map a fracture in a subterranean formation or to obtain other data such as pressure or temperature data from the fracture as the plurality of wireless sensors do in the present invention.

The Examiner asserts Simpson et al. teach in one embodiment that a GPS location data component can be included in the sensor signal and therefore essentially teach the claimed invention. However, Simpson et al. contains no teaching or suggestion that the disclosed sensing device utilize a GPS feature in a down hole environment. Nor is there any indication in Simpson et al. that the such a feature as disclosed in Simpson et al. would even work in such a harsh environment. Furthermore, Aronstam et al. fails to fill in the gaps in Simpson et al. In particular, it fails to teach or suggest injecting wireless sensors of Simpson et al. into a fracture for purposes of mapping the fracture and/or obtaining other information from the fracture such as pressure and temperature data. Indeed, neither reference alone or in combination teach or suggest such a novel method and apparatus.

Turning specifically to the claims. Neither Simpson et al. nor Aronstam et al. alone or in combination teach or suggest “introducing a plurality of wireless data sensors data sensors into a fracture in the subterranean formation,” as required by amended claim 1. Furthermore, neither Simpson et al. nor Aronstam et al. alone or in combination teach or suggest “a plurality of wireless data sensors each having a unique identifier adapted for injection in a fracture in the subterranean formation,” as required by amended independent claim 13. Therefore, amended independent claims 1 and 13, and claims 2-12 and 14-26, respectively, dependent therefrom, are believed patentable over Simpson et al. and Aronstam et al. either alone or in combination. Accordingly, the Examiner’s rejection of these claims over Simpson et al. in view of Aronstam et al. should be withdrawn.

B. Rejection Over Ayoub et al. in view of Aronstam et al.

The Examiner rejected claims 1-26 under 35 U.S.C. § 103(a) as being unpatentable over Ayoub et al. (2003/0208376) in view of Aronstam et al. (6,443,228). The Applicants respectfully traverse this rejection.

By the Examiner's own admission, Ayoub et al. fail to teach or suggest a specific identifier for each sensor. Office Action at 6. The basis for the Examiner's rejection is that Aronstam et al. teach of the obviousness of combining such feature with Ayoub et al. To establish obviousness based on a combination of the elements disclosed in the prior art, however, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. *In re Kotzab*, 217 F.2d 1365, 1369, 55 U.S.P.Q.2d 1313, 1316 (Fed. Cir. 2000). The Examiner fails to point to any passage within Aronstam et al. that illustrates the alleged teaching. This is because the Aronstam et al. patent is devoid of such teaching.

Turning to the claims, neither Aronstam et al. nor Ayoub et al. teach or suggest the combined steps of "assigning a unique identification number to each data sensor of a plurality of wireless data sensors; [and] introducing the plurality of data sensors into **a fracture in** the subterranean formation," as recited in amended independent claim 1. Furthermore, neither Aronstam et al. nor Ayoub et al. teach or suggest "a plurality of wireless data sensors **each having a unique identifier** adapted for injection into a **fracture in the** subterranean formation," as recited in amended independent claim 13. Therefore, amended independent claims 1 and 13, and claims 2-12 and 14-26, respectively, dependent therefrom, are believed patentable over Ayoub et al. and Aronstam et al. either alone or in combination. Accordingly, the Examiner's rejection of these claims over Ayoub et al. in view of Aronstam et al. should be withdrawn.

SUMMARY

In light of the above amendments and remarks, Applicant respectfully submits that the application is now in condition for allowance and early notice of the same is earnestly solicited. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact the attorney of record by telephone, facsimile or electronic mail, as indicated below.

Applicant believes that there are no fees due in association with the filing of this Response. However, should the Commissioner deem that any fees are due, including any fees for any extensions of time, Applicant respectfully requests that the Commissioner accept this as a Petition therefor, and directs that any fees be debited from Deposit Acct. 08-0300.

Respectfully Submitted,

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Date: November 19, 2004

As the three-month shortened statutory period for reply is due January 31, 2005, this Response is therefore considered timely filed.

AMENDMENTS

In the Drawings

Please replace Figures 1 and 2 with replacement Figures 1-2 and please add new Figures 3-4, which are attached as Exhibit 1 hereto. (A marked-up copy of the drawings is being provided for the convenience of the Examiner and is attached as Exhibit 2 hereto).

FIGURE 1



EXHIBIT 2

REPLACEMENT SHEET

~~2/2~~ 2/4

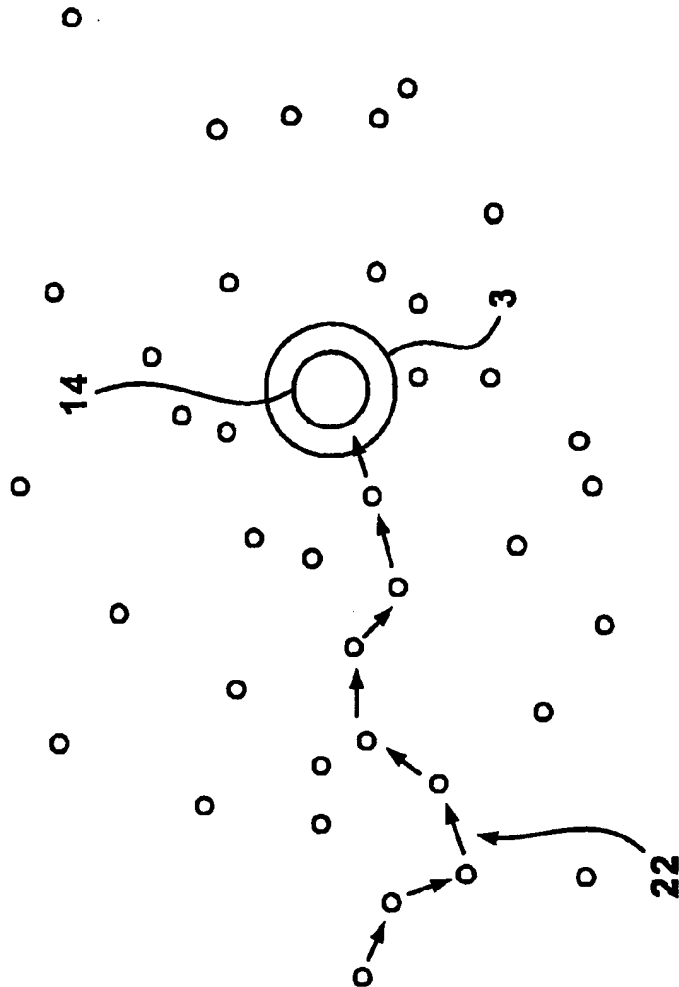


FIGURE 2